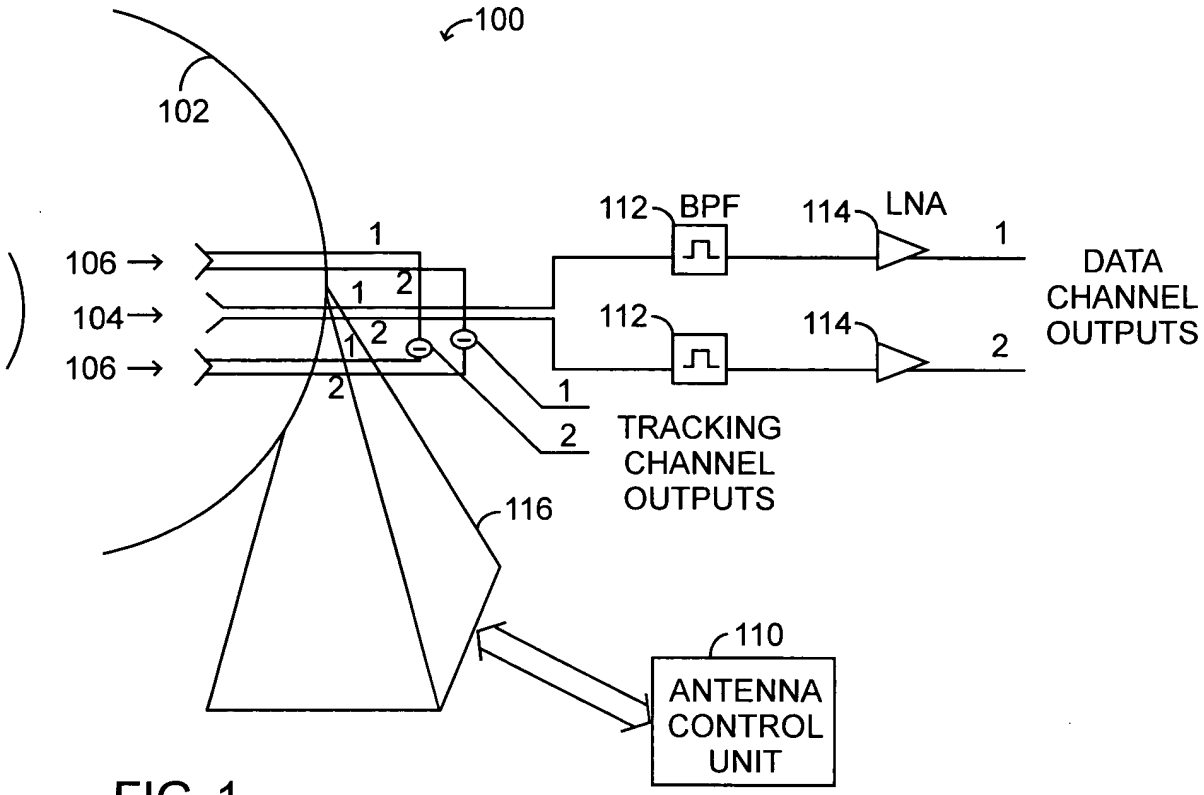
100
102
106
104
106
1
2
1
2
1
2
112
BPF
114
LNA
1
2
DATA
CHANNEL
OUTPUTS
1
2
TRACKING
CHANNEL
OUTPUTS
116
110
ANTENNA
CONTROL
UNIT

FIG. 1

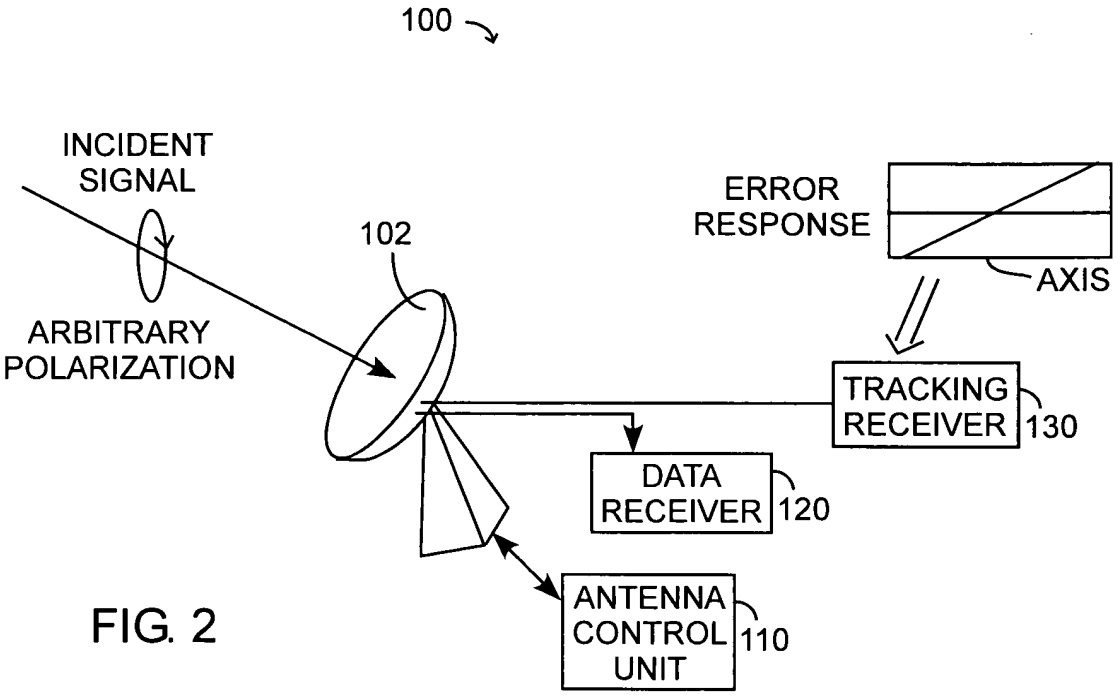
100
INCIDENT
SIGNAL
ARBITRARY
POLARIZATION
102
ERROR
RESPONSE
AXIS
TRACKING
RECEIVER
130
DATA
RECEIVER
120
ANTENNA
CONTROL
UNIT
110

FIG. 2

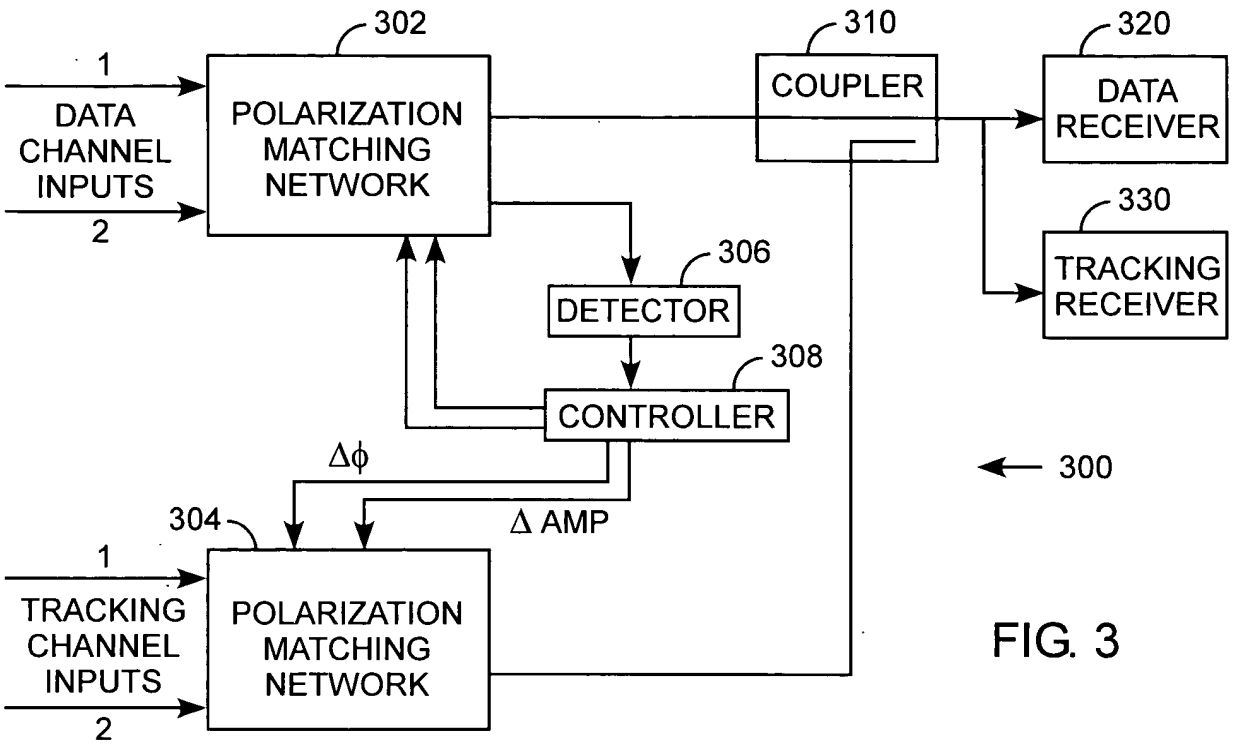
302
310
320
1
DATA CHANNEL INPUTS
2
POLARIZATION MATCHING NETWORK
COUPLER
DATA RECEIVER
330
TRACKING RECEIVER
306
DETECTOR
308
CONTROLLER
Δϕ
Δ AMP
300
304
1
TRACKING CHANNEL INPUTS
2
POLARIZATION MATCHING NETWORK

FIG. 3

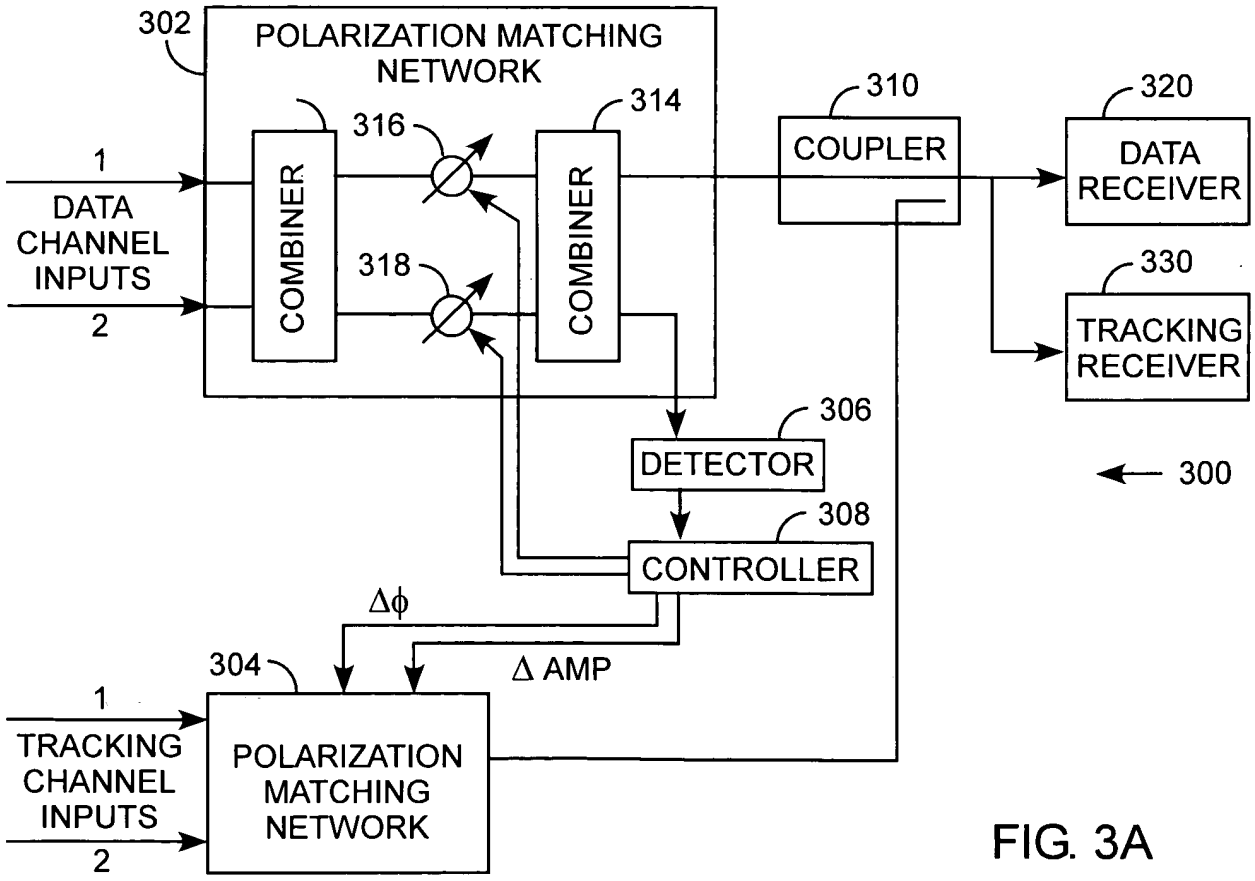
302
POLARIZATION MATCHING NETWORK
316
314
310
320
1
DATA CHANNEL INPUTS
2
COMBINER
318
COMBINER
COUPLER
DATA RECEIVER
330
TRACKING RECEIVER
306
DETECTOR
300
308
CONTROLLER
Δϕ
Δ AMP
304
1
TRACKING CHANNEL INPUTS
2
POLARIZATION MATCHING NETWORK

FIG. 3A

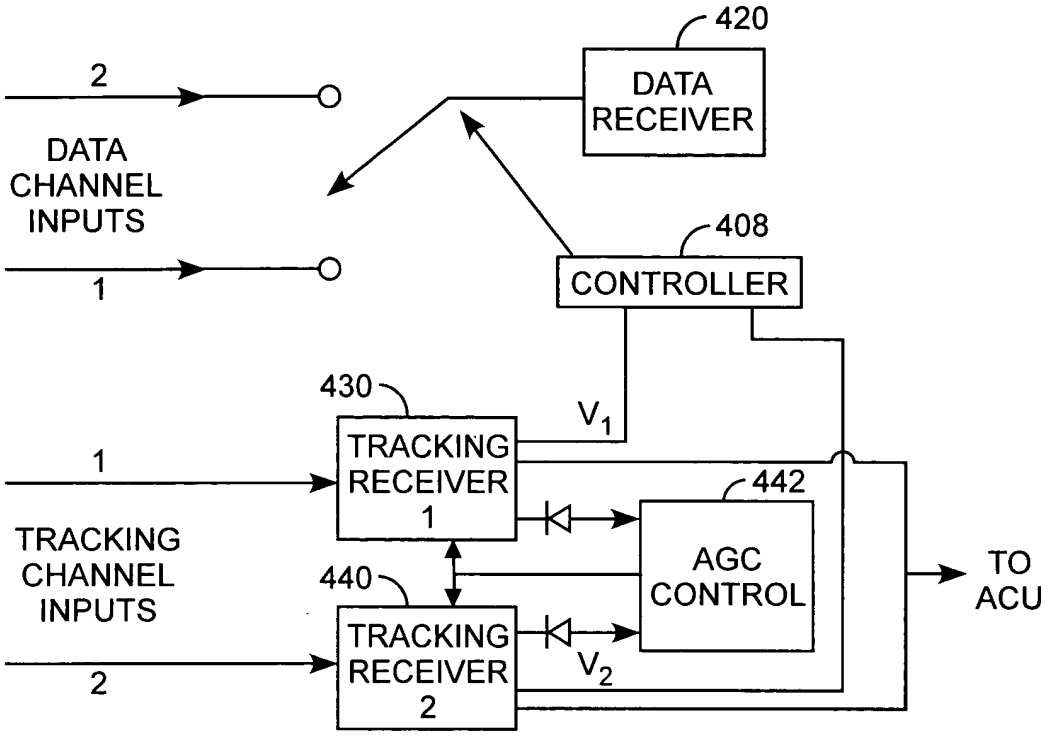
420
DATA RECEIVER
2
DATA CHANNEL INPUTS
1
408
CONTROLLER
430
TRACKING RECEIVER 1
V_1
1
TRACKING CHANNEL INPUTS
2
442
AGC CONTROL
440
TRACKING RECEIVER 2
V_2
TO ACU

FIG. 4

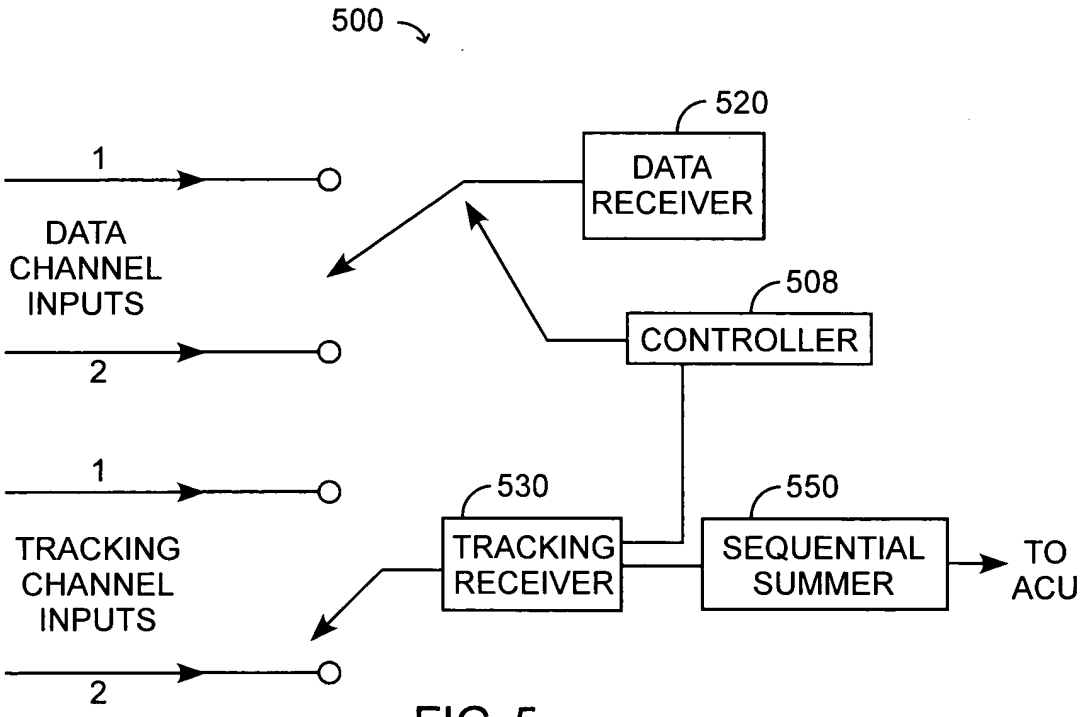
500
520
DATA RECEIVER
1
DATA CHANNEL INPUTS
2
508
CONTROLLER
1
530
550
TRACKING CHANNEL INPUTS
TRACKING RECEIVER
SEQUENTIAL SUMMER
TO ACU
2

FIG. 5

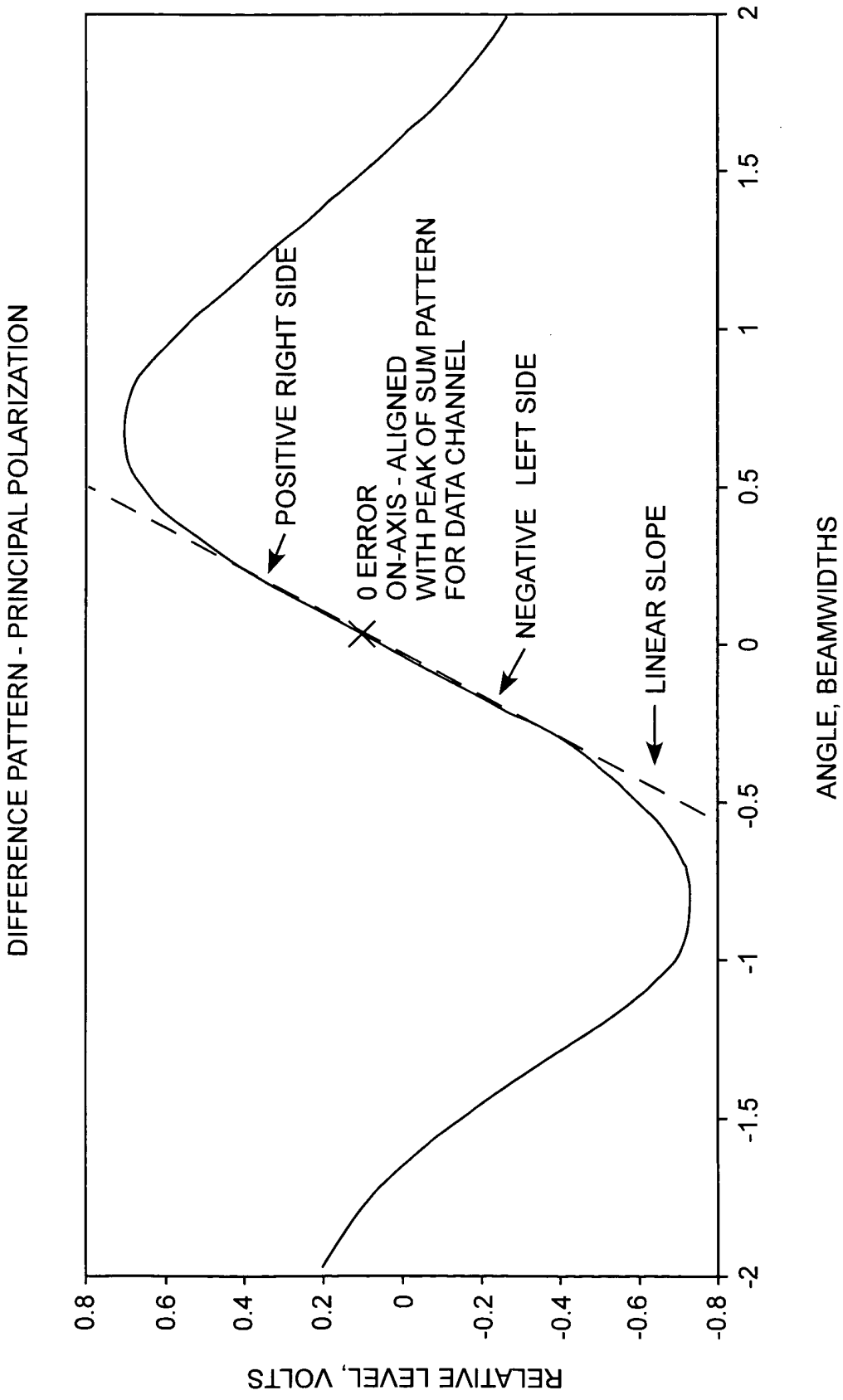
DIFFERENCE PATTERN - PRINCIPAL POLARIZATION
POSITIVE RIGHT SIDE
0 ERROR
ON-AXIS - ALIGNED
WITH PEAK OF SUM PATTERN
FOR DATA CHANNEL
NEGATIVE LEFT SIDE
LINEAR SLOPE
RELATIVE LEVEL, VOLTS
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
ANGLE, BEAMWIDTHS

FIG. 6

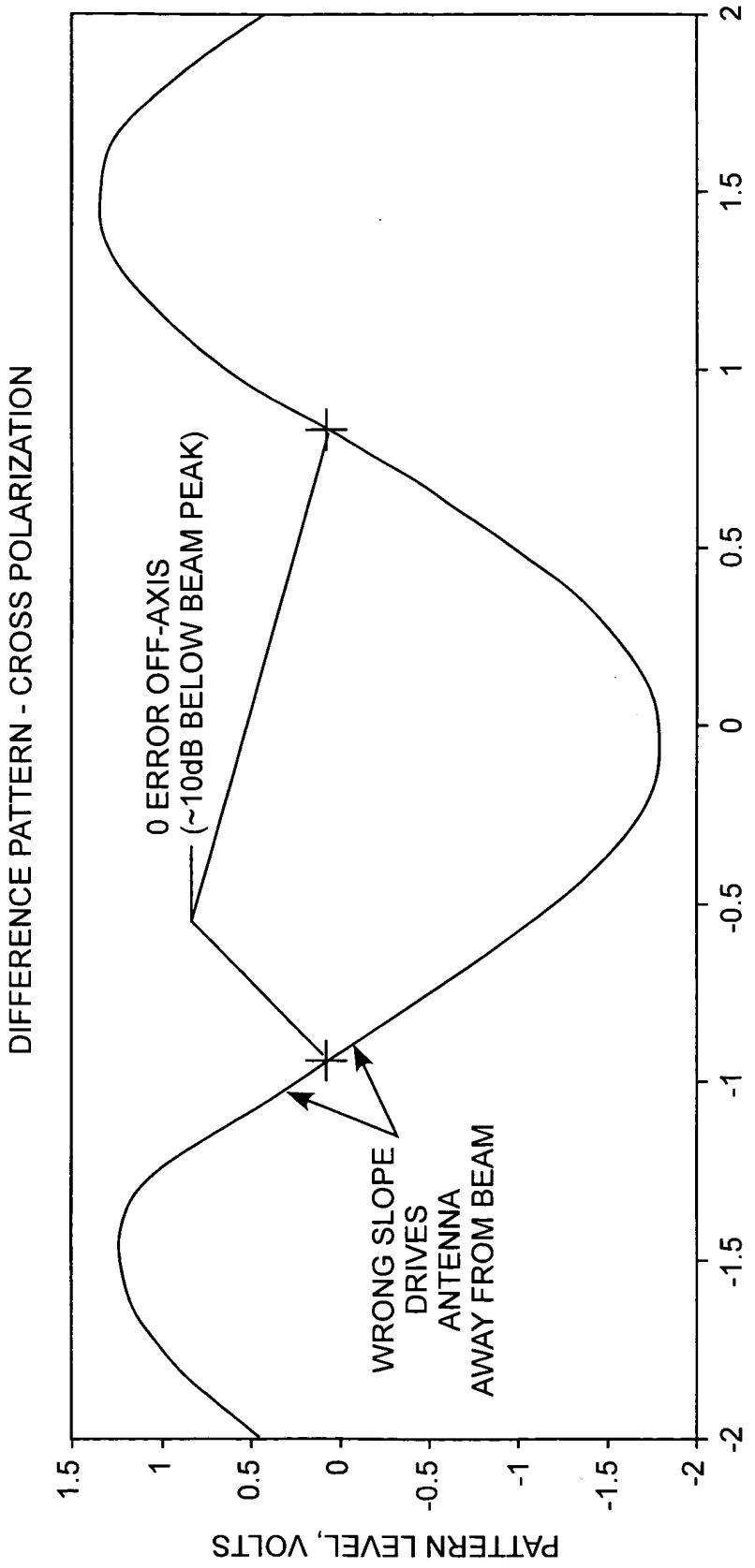
DIFFERENCE PATTERN - CROSS POLARIZATION
0 ERROR OFF-AXIS
(~10dB BELOW BEAM PEAK)
WRONG SLOPE
DRIVES
ANTENNA
AWAY FROM BEAM
PATTERN LEVEL, VOLTS
1.5
1
0.5
0
-0.5
-1
-1.5
-2
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
ANGLE, BEAMWIDTHS

FIG. 7